

Abstract

A process for the preparation of a silicon single ingot in accordance with the Czochralski method. The process for growing the single crystal silicon ingot comprises controlling (i) a growth velocity, v , (ii) an average axial temperature gradient, G_0 , during the growth of a constant diameter portion of the crystal over a temperature range from solidification to a temperature of no less than about 1325 °C to initially produce in the constant diameter portion of the ingot a series of predominant intrinsic point defects including vacancy dominated regions and silicon self interstitial dominated regions, alternating along the axis, and cooling the regions from the temperature of solidification at a rate which allows silicon self-interstitial atoms to diffuse radially to the lateral surface and to diffuse axially to vacancy dominated regions to reduce the concentration intrinsic point defects in each region.